I. IN THE SPECIFICATION

Please replace the paragraphs at page 4, lines 11 – 17 with the following replacement paragraphs:

--Figure 1 illustrates the 1993 version of the International Phonetic Alphabet.

Figure 2 illustrates the method associated with the preferred embodiment of the present invention for determining a compact model to transcribe the Arabic language acoustically based on a well-defined basic phonetic study.

Figure 3 illustrates in further detail the data extraction step of Figure 2.

Figure 4 illustrates the composition of the maximal set described in the method of Figure 2.

Figure 5 illustrates the various kinds of phonemes.

Figure 6 illustrations the reduction of maximal set for the text to speech system and the automatic speech recognition sets in a preferred embodiment of the invention.--

Please replace the paragraph at page 5, line 17 - page 6, line 2 with the following replacement paragraph:

--It should be noted that the International Phonetic Alphabet (IPA) was used in conjunction with this invention. The IPA, as defined by the International Phonetic Association (http://www.arts.gla.ac.uk/IPA/ipa.html) is a standard set of symbols for transcribing the sounds of spoken languages. The above mentioned website provides for a full chart of IPA symbols as reproduced in Figure 1. Furthermore, charts for consonants, vowels, tones and accents, suprasegmentals, diacritics and other symbols are also provided. The last version of the IPA dates to 1993, as shown in Figure 1.--

Please replace the paragraphs at page 8, line 12 - page 10, line 13 with the following

replacement paragraph:

--Figure 2 illustrates the method 100 associated with the preferred embodiment of the

present invention for determining a compact model to transcribe the Arabic language

acoustically (based on a well-defined basic phonetic study). First, a language for which a

compact model is to be developed is identified 102. Next, information regarding the identified

language is extracted or collected 104. Data extraction can be accomplished via a variety means

including, but not limited to: extracting data regarding the Arabic language via a network (such

as the Internet, Local Area Network (LAN), Wide Area Network (WAN) or database (local or

remote). Next, from the extracted data, a list is created where the phonological and phonetic

units are defined 106. As a next step, the variations in the Arabic language are identified 108.

For example, variations in classical Arabic, Modern Standard Arabic (MSA), and colloquial

Arabic are identified. Next, a maximal set is created that contains all phonemes, allophones, and

transliteration symbols associated with the Arabic language 110. Transliteration refers to the

process of representing or spelling a word (in a first language) in the characters of another

alphabet (second language). Lastly, the maximal set is reduced 112 to provide for a compact set

to transcribe the Arabic language acoustically. The details of the reduction step are explained in

detail in the following sections.

The data extraction step of Figure 2 (102) is illustrated in further detail in Figure 3. With

the extracted data, terminological problems are identified 202. Certain terms that have been used

by several phonological linguists in their attempt to define and describe the nature of various

Arabic sounds have proved invalid; i.e. whereas few linguists may include phonemes like

/F7/,/R7/, and /X/ into the category of Emphatics , others may include them in the category of

pharyngeals. As a result of this non-final consensus, the most appropriate category depending upon their influence on the neighboring vowels was selected. Next, transcription problems associated with the language in question (e.g., Arabic) are identified 204. In contrast to what the IPA exhibits in using special symbols (ASCII characters) which might cause technical problems if used in the present system; the transcription set was limited to include the characters which can be typed easily on the keyboard. Furthermore, phonological and phonetic units were extracted or collected 206 and a feature set was established based on this information 208. Next, a representative symbol for the transcription alphabet is selected 210 and a structured source is built 212. Our structured source consists of Phonemes, which are divided into three main units: Consonants, Vowels and Semi-Vowels. The unit "Consonants" includes a variety of Allophones and Geminations. Aallophones may have their own gemination variety. The unit "Vowels" has a variety of allophones only, while the unit "Semi-vowel" has just gemination variety. The features of these units are determined according to three conditions: Place, manner of articulation in addition to the nature of the sound being voiced or voiceless.

Figure 4 illustrates the composition of the maximal set described in step 110 of Figure 2. Maximal set 300 comprises (but is not limited to): phonemes 302, allophones 304, a set of rules governing the selection of allophones 306, a set of examples 308, and the transliteration symbols 310. It should be noted that although the preferred language of this application is Arabic, one skilled in the art could extend the present invention to cover other similar languages. A detailed description of the Arabic phonetic study as per the present invention is given below.--

Please replace the paragraphs at page 12, line 10 - page 13, line 2 with the following

replacement paragraphs:

--The reduction of maximal set for the TTS and the ASR phonetic sets are described in

detail in Figure 6.

TTS Phonetic Set

In the phonetic set for the TTS system, all the phonemes and allophones with which any

given text message can be conveyed is found. For example, i) all the allophones for the vowels

are identified; ii) allophones that represent any borrowed word in Arabic are identified, and iii) in

the case of gemination, add symbols to represent the phoneme when it is geminated. Thus,

geminated phonemes represented by doubling the original symbol, are represented by a new

symbol.--

Please replace the paragraphs at page 21, line 1 - page 28, line 9 with the following

replacement paragraphs:

--TABLE 1   *Arabic Phonetic Alphabet Table*

The Table Supports:

_ 1) Well Educated Pronunciation (Used in Text To Speech)

2) In the Sound Features Field
    i. (+) = Voiced
    ii. (-) = Voiceless

L.Name	A. letter	Sound Features	New Alphabet	Examples	Transcription
Alif	ا	glottal plosive -	C	آلاا	Ce.dll.le
		epiglottal fricative +	0	مـؤرن	mu.0e4.4ln
Ba	ب	bilabial plosive +	b	باطل	b1.8l.le
	ڊ	geminated bilabial plosive +	B	تنبّه	te.ne.Be.0e
Ta	ت	alveolar plosive -	t	تكرل	teh.l3l
	تّ	geminated alveolar plosive -	T	سنّة	sl.Te
Tha	ث	dental fricative -	F	ثنائية	Fe.mE.ni.je
	ثّ	gemi¹nated dental fricative -	FF	مكثّف	mu.keF.Fef
Jim	ج	velar plosive +	g	جلس	gel.se
		alveolo-palatal fricative +	5		5el.se
	جّ	Geminated velar plosive +	G	منجّل	mu.te.Ve.Gll
			55		mu.te.Ve5.5ll
Ha	ح	Pharyngeal fricative -	h	حفر	ha.6A.rA
	حّ	Geminated pharyngeal fricative -	hh	صحّة	Slh.ha
Kha	خ	uvular fricative -	x	خنسة	xem.se
	خّ	geminated uvular fricative -	xx	السخّان	Ces.sex.xEn
Dal	د	alveolar plosive +	d	دعّة	DeVm
	دّ	geminated alveolar plosive +	D	مدّة	me.De

Name	Letter	Description	Code	Word	Transcription
Dal	ذ	dental fricative +	4	الذاب	CE.4En
	ذّ	geminated dental fricative +	44	الذِّئب	Ce4.4E.tlJ
Ra	ر	r flap not retroflexed +	r	رَمسيس	ram.s3s
	رّ	alveolar trill +	R	قُرآن	Ce.qA.RA
Za	ز	alveolar fricative +	z	زَينت	Zejt
	زّ	geminated alveolar fricative +	zz	خَزّان	xez.ze.na
Sin	س	alveolar fricative -	s	سَبيل	se.b3l
	سّ	geminated alveolar fricative -	ss	السَّبت	Ces.sebt
Shin	ش	post alveolar fricative -	c	شَركة	ce.ri.ke
	شّ	geminated post alveolar fricative -	cc	الشُّواف	Cec.ce.WEf
Sad	ص	pharyngealised s -	S	صُلح	SAl3
	صّ	geminated pharyngealised s -	SS	القَصّاد	CAS.SA.J1d
Dad	ض	pharyngealised d +	6	حَضَر	hA.6A.rA
	ضّ	geminated pharyngealised d +	7	قَضّاف	fl.7A
Ta	ط	pharyngealised t -	8	طَحن	8A.la.Ve
	طّ	geminated pharyngealised t -	9	البَطّارية	Cel.bA.92.rl.Je
Za	ظ	pharyngealised dal +	Z	ظالم	ZAl.la
	ظّ	geminated pharyngealised dal +	ZZ	الظّالم	CAZ.ZA.l1m

Letter	Arabic	Symbol	Description	Word	Transliteration
Ain	ع	V	pharyngeal fricative +	عَرْض	VAr6
	ع	VV	geminated pharyngeal fricative +	الْعَابَة	Ce.clV.Ve
Ghain	غ	P	uvular fricative +	الصَّابَة	CeS.Si.b1.Pa
	غ	PP	geminated uvular fricative +	نُوَزِّعُ	te.weP.Pol
Fa	ف	f	labiodental fricative -	الْحَفْل	Cel.hefl
	ف	v	labiodental fricative +	تِلِفِزْيُون	tl.li.vls.jOn
	ف	ff	geminated labiodental fricative -	اسْتَخَفَّ	Cls.te.xef.fe
qaf	ق	q	uvular plosive -	قَصْر	QASr
	ق	Q	geminated uvular plosive -	?	ha.QA.Hu
kaf	ك	k	velar plosive -	كُلِّيَة	kul.li.Je
	ك	K	geminated velar plosive -	تَمَكَّنَت	te.me.Ke.net
lam	ل	l	alveolar lateral approximant +	جُلَّ	ju.le.B3
	ل	LL	geminated alveolar lateral approximant +	الله	CAL.L2X
		ll	geminated pharyngealised l +	المُسَلَّة	Cel.mu.sel.le.ha
mim	م	m	bilabial nasal +	مَسْجِد	mes.5ld
	م	mm	geminated bilabial nasal +	الحَمَّامَة	Cel.Hem.me
nun	ن	n	alveolar nasal +	نَحْن	ne.Vem
	ن	N	velar nasal +	النَّكَّارَة	CaN.ka.ra
	ن	nn	geminated alveolar nasal +	تَصَنَّعَ	ta.San.na.Va
ha	ه	X	glottal fricative -	فَهْد	feXd
	ه	H	glottal fricative +	ظَهْرَة	ZA.Ha.rA

waw	ﺓ	geminated glottal fricative +	HH	ﺛﻮﻗﺔ	ta.weH.He.me
	و	labio-velar approximant +	W	ﺩﺭﻙ	du.wel
	ﻭّ	geminated labio-velar approximant +	W	ﺍﻟّﺮﻭﻙ	Ce.Te.le.WuF
ya	ي	palatal approximant +	j	ﻳﻨﺘّﻢ	jed.Vom
	يّ	geminated palatal approximant +	J	ﺍﻟّﺪﻳﻦ	Ce.Te.de.Jon
fatha		open mid front	e	ﺗﺨﺮﻧﺄ	te5.rl.be
		open front	a	ﺻﻨّﻒ	SA.da.qa
		low back	A	ﻗﻔﻰ	qA.62
kasra		mid-high mid-front short	i	ﺍﻟﻨﺎﻗﻠ	Cen.n1.qld
		close front	I	ﺍﻟّﻰ	Ci.lE
damma		close back	u	ﺍّﻴﻬّﺎﺕ	Cum.me.HEt
		open – mid back	o	ﺍﻟﻐﺮﻳﻦ	Cel.Po.raf
alif		mid front long	E	ﺍﻟّﺸﻴﺎﺏ	Cec.ce.bEb
		open front	1	ﺍﻟﺨﺎﺳﺐ	Cel.hE.slb
		low back	2	ﺍﻟّﻘﺼﺎﻝ	Cln.fi.S2l
waw		close back	U	ﺗّﺨﻮﺭ	te.dUr
		open mid back	O	ﻛّﺮﻭﺭ	duk.tOr
ya		mid-high mid-front long	Y	ﺍﻟّﺸﻴﺮ	Cem.bYr
		close front	3	ﺭﺋﻴﺲ	ra.03s

TABLE 2

wegd	وَجْد
waqt	وقْت
WA6V	وَضْع

(Different symbols that represent short Fatha)

NE.0Im	نــائم
N1.qId	ناقـد
N2.6Ig	ناضـج

(Different symbols that represent long Fatha)

TABLE 3

Ben.nEC	بَنّــاء
Ra.B3	رَبّــي
8A.lab	طلـب
CA.9A.lab	الطّلــب